

**Massachusetts Institute of Technology**  
**Department of Physics**

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**Condensed Matter Theory Seminar**

"Topological magnon bands and effective Hamiltonians for periodically driven systems"

**Gregory A. Fiete**, University of Texas at Austin

**Abstract:** The effect of spin-orbit coupling in condensed matter systems has received intense study over the past decade, most notably in the context of topological band insulators where electron-electron interactions are not essential for the topological properties. In this talk, I will focus on the opposite limit of strong electronic correlations with spin-orbit coupling. I will describe two different (materials motivated) two-dimensional models in which the spin-orbit coupling leads to topological band structure in the magnetic excitations. In the second half of the talk, I will turn to recent work describing an approach to achieving effective time-independent Hamiltonians for periodically driven, interacting many-particle systems. The method agrees with the Magnus expansion in the high frequency limit, but appears to also work especially well in the strong-driving, low-frequency limit.

**12:00pm noon**  
**Tuesday, October 2, 2018**  
**Duboc Room (4-331)**

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Host: Debanjan Chowdhury